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#### II. Psychological Needs of Adolescents 1

##### A. Summary of Conclusions 2

Q: Please define for the Court the field of adolescent psychology. 3

A: Adolescent psychology is the study of the development of young people during the 4 period from childhood to adulthood. That period corresponds roughly to the second 5 decade of life. Adolescent development involves the changes that occur in biological, 6 behavioral, and cognitive functioning during this period as well as the changes that occur

7

in adolescents' social context—including their families, peer group s, and schools. 8

Q: Before we discuss adolescent psychology, would you briefly explain how

adolescent 9

psychology is relevant to your conclusions in this case? 10

A: In order to determine whether cigarette marketing influences teenagers to smoke, we first 11

need to understand the experiences and needs of adolescents. We can then ask whether 12 those needs make adolescents vulnerable to the themes and images that tobacco 13

companies associate with smoking. 14

Q: What is the question you examined in this case? 15

A: The question I examined is whether the images and themes the tobacco companies 16 created for use in their marketing of cigarette brands motivate adolescents to smoke.

Put

17

another way, I examined whether the tobacco companies, through their marketing, 18 communicate to adolescents that smoking these cigarette brands will satisfy important

19

adolescent needs such as being popular, accepted by peers, cool, independent, attractive,

20

or masculine or having lots of excitement and fun. 21

Q: In studying that question, did you reach any conclusions? 22

A: Yes. 23

Q: What did you conclude? 24

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A: Tobacco companies understand what motivates adolescents to smoke, such as desires to 1

be popular, masculine, independent, cool, rebellious, or to have excitement. The 2 companies use their understanding of adolescent needs to create images in marketing 3 their brands (e.g., Marlboro, Camel, Newport) that convey to adolescents they can 4 achieve such desired outcomes by smoking these brands. In short, tobacco companies 5 market cigarettes to adolescents by exploiting the psychological needs of adolescents.

6

Q: Upon what do you base this conclusion? 7

A: I base this on the published literature on adolescent development, as well as on my own 8

research and clinical work with adolescents and their families that I mentioned earlier 9

when discussing my credentials. I also base it on the internal documents of Defendants.

10

B. Changes During Adolescence 11

Q: Have you prepared a chart that identifies studies of adolescent development and 12

adolescents' psychological needs that you have relied upon? 13

A: Yes, it is Demonstrative 1. 14

Q: Now, based upon the research literature and your research and work with youth, 15

please start by explaining what occurs during adolescence. 16

A: Adolescence is a period of substantial change. The most important changes include:

(1) 17

puberty; (2) increasing independence from parents; (3) changes in school, namely the 18 organization of middle and high school; and (4) an increase in the importance of peers.

19

1. Puberty 20

Q: Let's turn to the first significant change you mentioned--puberty. What are some 21

of the biological changes that adolescents experience during puberty that are 22 relevant to your conclusions? 23

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A: Adolescence marks the most significant period of change in human biological 1 development; the most important facet of adolescent development is puberty. Puberty 2

involves: rapid acceleration in growth, development of primary and secondary sex 3 characteristics, changes in the quantity and distribution of fat and muscle, and in the 4

circulatory and respiratory systems that contribute to increased strength and endurance. 5

Q: At what age does puberty normally begin? 6

A: There is substantial variability in the onset of puberty, with its onset varying by as 7

much 7

as five years. Puberty typically begins sometime between the ages of 10 and 15 years 8 old. This means that many adolescents may be considerably more or less physically 9

mature than peers with whom they interact every day. On average, puberty begins earlier 10

for girls than it does for boys. 11

Q: From the perspective of adolescent psychology, what are some of the consequences 12

of the biological changes adolescents undergo during puberty? 13

A: These biological changes affect the body image of both sexes, but particularly adolescent 14

girls. Puberty brings with it an increasing interest in the opposite sex. Growth and sexual

15  
maturation also increase adolescents' desire for independence and autonomy. 16

## 2. Increasing Independence From Parents 17

Q: You testified about a second change during adolescence involving adolescents' 18  
independence from their parents. What changes occur? 19

A: There is an increase in adolescents' desire to participate in decision-making and an 20

increase in their demands for autonomy. There is also typically a decrease during 21  
adolescence in how much parents supervise or monitor the activities of their offspring. 22

Q: What happens as a result of these changes? 23

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A: In many families, conflict increases as adolescents demand more autonomy and 1  
parents 1

attempt to monitor and set limits on their adolescent's activities. Sometimes this 2  
results 2

in parents gradually granting increased autonomy as the adolescents demonstrate their 3  
ability to use their new freedoms appropriately. However, sometimes, conflict continues 4

and the adolescent becomes rebellious or defiant. Often parents give up attempts to 5  
monitor and to set limits on their teenagers' activities. 6

## 3. Changes in School 7

Q: Third, you mentioned that the organization of middle schools and high schools is 8  
a 8

change that adolescents experience. What specifically happens? 9

A: For most adolescents, there are two transitions, one from elementary to middle or 10  
junior 10

high school and the other to high school. Important changes in both the social and 11  
academic environment of adolescents accompany these transitions. These changes 12  
include decreased support from teachers, increased academic competition, and increased 13

importance of peer group relationships. 14

Q: How do these changes affect an adolescent? 15

A: They contribute to an adolescent's need to bolster his or her self-esteem and sense 16  
of 16

competence and lead many adolescents to become less interested in academics and more 17  
17

interested in social success. 18

Q: How are these changes relevant to adolescent development? 19

A: They have an impact on the way young people think about school, about themselves, 20  
and 20

about their peer group. 21

Q: What does the research show happens to teacher support when an adolescent 22  
moves 22

beyond elementary school to middle school and high school? 23

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A: Support from teachers diminishes when young people leave elementary school. 1

Q: Is that significant? 2

A: Yes. 3

Q: Why? 4

A: Teacher support contributes to adolescents' self-esteem, valuing of academics, 5  
feelings of 5

academic competence, and academic success. So there is a lessening of support at the 6  
same time that adolescents have a greater need for self-esteem and other values 7

associated with the academic experience. Therefore, it is not surprising that numerous 8  
8

studies show that academic performance suffers when young people transition out of 9  
elementary school. Interestingly, while there generally tends to be less teacher 10  
support in 10

10

middle school, middle school teachers are significantly more likely than elementary 11 school teachers are to believe in strongly controlling and disciplining students and tend to

12  
trust students less. 13  
Q: How do these beliefs about control, discipline, and trust interrelate with adolescents' 14 needs? 15

A: These beliefs directly clash with students' growing needs for autonomy. Across grades, 16 adolescents have an increased desire for a say in decisions about what happens in the 17 classroom. 18

Q: What does the research show about academic competition as young people move 19 from elementary school to middle school and high school? 20  
A: Evidence indicates that academic competition increases once young people leave 21 elementary school. Typically, elementary schoolwork emphasizes an individual student's 22 accomplishments rather than comparisons of one student's performance with that of other 23

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students. In middle school and beyond, the focus shifts to the performance of each 1 student relative to his or her peers. These conditions promote students focus ing on their 2 abilities relative to their peers more than on their mastery of the material. 3

Q: Does academic competition play a role in adolescent development? 4  
A: Yes. 5

Q: Please explain how that works. 6  
A: Generally, adolescents' perceived competence in academic, social, and athletic endeavors 7 and their perceived physical appearance help to support their self-esteem. In middle 8 school and high school, as academic work becomes more competitive in the sense that 9 each student's performance is judged relative to other students' performances, students 10 are increasingly segregated according to academic ability. For those who are less 11 competent academically, this situation, coupled with decreased teacher support, leads to a 12 lowered sense of academic competence, a loss of interest in school, and a decrease in a 13 feeling of belonging. Loss of interest in school and declines in performance continue 14 through high school and lead to declining feelings of self- worth or self-esteem and 15 increased truancy and school drop-out. 16

Q: What happens to those adolescents who do not succeed academically? 17  
A: Adolescents who are not very successful academically in this new, more competitive, 18 atmosphere will search for other ways to define themselves and feel competent. They 19 may seek success in the social realm, but moving in that direction has its own challenges, 20

as we shall see when we discuss peer relations. 21  
4. The Importance of Peers 22

Q: You mentioned a fourth significant factor that occurs in adolescence—an increase in 23

Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 42  
the importance of peers. How is this change relevant to adolescent development? 1

A: Popularity and peer approval become critical during this time. This development results, 2 in part, from the above-described changes in adolescents' physical development, family 3 life, and school experience. The increased importance of peer relations also stems from 4

the increased levels of peer harassment and teasing that occur in middle and high school.

5

Q: What roles do teasing and harassment have in the changing social relations between 6

students during adolescence? 7

A: Teasing and harassment make some adolescents very motivated to fit in with a group of 8

peers. Fitting in is not just a matter of being liked and approved of by peers, it is often a 9

matter of achieving safety from harassment and teasing through membership in a peer 10 group. 11

C. Psychological Needs That Result From Changes in Adolescence 12

Q: You have described four different significant changes that occur during 13

adolescence: (1) puberty; (2) increased independence from parents; (3) changes in 14

school, namely the organization of middle and high school settings; and (4) an 15

increase in the importance of peers. What effects do these changes have on 16

adolescents that are relevant to your conclusion that the tobacco companies market 17

to adolescents? 18

A: The diverse and substantial changes adolescents experience in their bodies, their family 19

relationships, their school structure and support, and especially, their relationships with 20

peers create strong psychological needs. This makes adolescents vulnerable to cigarette 21

marketing that conveys that smoking can help them meet those needs. 22

Q: Could you define the term "psychological needs?" 23

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A: A psychological need is simply a want, wish, or desire to achieve a psychological state, 1

such as the desire to feel masculine, attractive, popular, cool, independent, or to rebel 2

against authority. 3

Q: Based upon research and your experience, what specific psychological needs result 4

from the changes that occur during adolescence? 5

A: The changes I have described result in a set of intertwined and powerful adolescent 6

needs: (1) to develop a self- image that bolsters confidence and supports adolescents in 7

their attempts to fit in with peers; (2) to be popular and acquire peer approval; (3) to feel 8

and be seen as independent; (4) to be popular with the opposite sex; (5) in the case of 9

boys, to be seen as masculine, rugged, and tough; (6) in the case of girls, to feel and be 10

seen as attractive; (7) to cope with negative emotions such as anxiety and depression; (8)

11

to experience fun, adventure, and excitement, and take risks; (9) to succeed in school, 12

sports, and social activities; and (10) to rebel against authority. 13

1. Self-Image 14

Q: Based upon research and your experience, let's discuss each of the psychological 15

needs that result from the changes that occur during adolescence. First, please 16

describe an adolescent's psychological need to develop a self-image that supports 17

him in his peer relations. 18

A: We all have a need to feel good about ourselves. However, in adolescence, the need

can 19

be particularly acute. Issues of "who I am" become important during this period because  
20  
of puberty, the increased demands of school, and the heightened importance of the peer  
21  
group that I just described. For example, a young man who is beginning to mature 22  
physically is worried about how he is doing in school. He wants his peers to accept  
him,

23

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and he will start to think about how he looks to others—whether he seems "smart" and 1  
whether others like him. He will be quite motivated to look and behave in ways he 2  
perceives convey a good image. 3

A self- image is also important in adolescence because it is a time of thinking 4  
about all kinds of new roles and experiences. Those of us who have achieved adult work,  
5  
family, recreational, and civic roles do not have to think about who we are in these  
terms.

6

The issues are pretty well settled. But in adolescence, numerous possibilities become 7  
available for exploration for the first time. These include dating, staying out late,  
driving

8

a car, getting a job, playing in competitive sports, being a student leader, and so on.  
As a

9

result, adolescents tune in acutely to information about what older adolescents and  
young

10

adults do in these realms. By observing others, they can try on images that they might  
11

like, such as living an exciting adult life. 12

Q: Are adolescents' self-images simply a matter of how they view themselves? 13

A: No, an adolescent's self-image also reflects how the adolescent hopes or believes  
that

14

others see him or her, including peers. Some developmental psychologists have argued 15  
that many adolescents are so acutely concerned with how others view them that they are

16

constantly in the presence of an "imaginary audience." 17

Q: How do adolescents' self-images help them in their relationships with peers? 18

A: To the extent that young people can feel they are popular, "cool," tough, masculine  
or

19

feminine, clever, and so on, they can feel more confident in their interactions with  
others.

20

Further, to the extent that others view them in these ways, the adolescents will be  
more

21

likely to be liked and admired by others, to have friends, and to have all the rewards  
that

22

come with having a set of friends. 23

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2. Popularity and Peer Acceptance 1

Q: Please describe the adolescent psychological need for popularity and peer  
approval. 2

A: The need to fit in or gain acceptance from peers may be the single most important 3  
psychological need of most adolescents. The biological, family, school, and peer  
changes

4

I have described drive this need. 5

Q: If you can, would you illustrate your point with an example? 6

A: Certainly. An adolescent boy might notice that he is not growing as fast as other boys,

7

that he is having trouble competing academically, or that he is getting much less 8 psychological support from teachers than he did in elementary school. He might also be 9

experiencing teasing from peers—especially if he is small for his age, doesn't dress well,

10

or is not particularly skilled athletically. Such a boy has many reasons to care about 11

whether his peers like and admire him. If he cannot feel successful academically, 12 perhaps he can achieve a sense of success by being popular among his peers. And, if he 13

can gain acceptance from peers, it will mean that he can escape the put-downs and 14 ridicule that would otherwise pain his every day. 15

Similarly, a girl might experience an early growth spurt that makes her self- 16 conscious about her looks. She, too, might find that she is not doing well in school and 17

that her teachers make demands on her, but don't seem very interested in her as a person.

18

Especially if she is not very good looking or doesn't have the right clothes, she may be 19

the victim of put-downs from other girls. All of these experiences will contribute to her

20

being very interested—even desperate—to fit in, to know that others like her, or simply 21

to feel accepted. 22

Q: In addition to escaping teasing from peers, are there benefits to peer acceptance? 23

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A: Definitely. Peer acceptance brings with it many other rewards. An adolescent who is 1

accepted gets invitations to parties and other fun events, meets members of the opposite 2

sex, gets support from peers for their efforts in school and sports, and gets more involved

3

in extracurricular activities. Being accepted can even make one the center of attention 4

and a leader among students. 5

Q: Do adolescents' needs for popularity affect their choices of consumer items, 6 behaviors, and activities? 7

A: Yes. Because their own popularity is so important to many adolescents, they are keenly 8

aware of what are the "in" and popular styles. By choosing a popular brand or activity- 9

such as the latest video game—that is popular with their peers, they can have confidence

10

that others will approve their choices. Since having things in common is a fundamental 11

basis for friendship formation, an adolescent can be sure that they will have things in 12

common with many others simply by choosing the most popular brands and activities. 13

3. Independence and Autonomy 14

Q: Please describe an adolescent psychological need to feel and seem to be independent. 15

A: Growth and sexual development, along with the pull of the peer group, bring about an 16



increased desire for independence and autonomy. As they and their peers see themselves  
17  
becoming physically more like adults, adolescents increasingly desire and seek 18  
behavioral autonomy in which they can make their own decisions about their activities  
19  
and when they come and go. Parents and teachers typically set limits on young people's  
20  
autonomy. This heightens adolescents' desire to assert their independence. Learning  
that  
21  
something is "for adults only" makes it all the more appealing to adolescents. As 22  
adolescents strive to achieve maturity and independence, they are particularly  
attentive to

23  
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cues about what constitutes independence or maturity. The way in which the peer group 1  
often makes it embarrassing to be seen as a "baby" or as being dependent on "mommy" 2  
and "daddy" also drives the motivation for maturity and independence. Thus, the 3  
appearance of maturity and independence makes adolescents feel more secure with their  
4  
peer group. 5

#### 4. To be Popular with the Opposite Sex 6

Q: Please describe adolescent psychological needs to be popular with the opposite  
sex. 7

A: Due primarily to puberty, adolescents experience a substantial increase in interest  
in  
the 8  
opposite sex, sexual desire, and sexual activity. In this context, it can be extremely  
9  
important to an adolescent that he/she feels he/she is appealing to the opposite sex.  
10  
Indeed, in this culture, physical attractiveness is so highly valued that efforts to  
look good

11  
often consume adolescents as they search for information about what defines 12  
attractiveness and how they can achieve it. 13

#### 5. Boys: Masculinity, Ruggedness, and Toughness 14

Q: Please describe an adolescent boy's need to be masculine, rugged, or tough. 15

A: It is essential to most boys that they feel they are masculine and that others see  
them

as 16  
such. For boys, masculinity is at the core of their self- image. It is vital to their  
17  
acceptance by most other boys. Most of the girls that they are interested in will judge  
18  
them in terms of this attribute. 19

This culture closely links masculinity with images of toughness or ruggedness. If 20  
young men make their own decisions and seem to be able to take care of themselves, they  
21  
think of themselves as manly. They will also appear manly to those around them. This 22  
concept of masculinity can create problems for many men in later life, but it is the  
ideal

23  
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that the majority of adolescents seek. Information about how to look manly, tough, and  
1  
rugged are thus of great interest to adolescent boys; they will actively seek out this  
2  
information. 3

#### 6. Girls: Attractiveness 4

Q: Please describe an adolescent girl's psychological need for attractiveness. 5

A: For girls, increased concerns about their physical attractiveness, size, and body  
image

6

often accompany growth and physical development. Entry into prestigious peer groups 7 also depends on attractiveness. Thus, most adolescent girls are highly desirous of 8 knowledge about what fashions are in vogue, how they can be alluring, and what the 9 latest styles are. Information about celebrities, such as movie stars, is of great interest for

10

clues about what a girl can do to achieve beauty, social success, and romance. By 11 reading about celebrities, they can vicariously experience the popularity that the celebrit

y 12

experiences and perhaps get some clues about how they too can achieve social success.

13

Girls' puberty prompts increased interest by boys and there is evidence that early pubertal

14

development is a risk factor for involvement in other problems, especially when 15 accompanied by other risk factors. Evidence indicates that early maturing girls get 16 involved with older boys who are already involved in problem behavior. For these girls, 17

their deviant peer group is older boys. 18

7. Coping with Anxiety and Depression 19

Q: Please describe an adolescent's psychological need to cope with anxiety and 20 depression. 21

A: Many of the changes I have described have an emotional impact on adolescents. For 22

example, exposure to bullying, teasing, or harassment is associated with depression, 23  
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loneliness, anxiety, and lower self-esteem. Academic failure and concerns about one's 1 image also contribute to distress. Often the anxiety or depression that an adolescent feels

2

is something he or she has not experienced before. The research shows that the incidence

3

of depression increases in adolescence and occurs at a higher rate among girls than boys

4

throughout adolescence into adulthood. 5

Q: How do adolescents respond to bullying or teasing incidents that you indicated are 6

common in adolescence? 7

A: These experiences create an enormous concern among many adolescents about how their 8

peers view them. Adolescents with such a heightened concern are more self-conscious in 9

social situations and have a greater level of social anxiety than other adolescents do. 10

Q: How do adolescents handle these heightened concerns? 11

A: Under these circumstances, a young person can be very motivated to find ways to escape 12

such derision and gain acceptance from others. They may try to avoid others, but that is

13

next to impossible in a school situation. They will try to conform to what others think 14

and do by adopting styles, behaviors, and attitudes of their more socially successful peers. 15

Q: You said that, for many adolescents, depression and anxiety are new experiences. 16

Would you elaborate? 17

A: For many, adolescence may be the first time they have experienced strong anxiety or

18  
feelings of sadness because it is the first time they have encountered the stresses of  
19  
academic and social competition. Under these circumstances, adolescents search for 20  
ways to feel comfortable and look for cues from their environment as to how others 21  
achieve relaxation and tranquility. Substance use is one means of trying to control  
these  
22  
strong emotions. 23  
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8. Risk Taking, Excitement, Fun, and Adventure 1  
Q: Please describe an adolescent's psychological need to experience fun, adventure,  
and 2  
excitement, and to take risks. 3  
A: Partly due to brain development, adolescents experience an increased need for  
excitement 4  
and fun. In psychological terms, adolescence is a period of higher levels of sensation  
5  
seeking. 6  
Q: What does sensation seeking involve? 7  
A: Sensation seeking involves an intense need for exciting, risky, and adventurous 8  
experiences. 9  
Q: When does this period of higher sensation seeking occur? 10  
A: Although there is considerable variation in sensation seeking, on average it  
increases  
11  
between ages 9 and 14 and is higher for males than females. It remains elevated or 12  
declines slightly until the twenties and declines more substantially from the twent ies  
13  
through the fifties. 14  
Q: What causes or precipitates sensation seeking in adolescents? 15  
A: Studies suggest that sensation seeking is, to a substantial degree, biologically  
driven.  
16  
However, the social environment also influences the expression of sensation seeking and  
17  
the forms of behavior it promotes. 18  
Q: What kind of outlets or activities will adolescents explore in response to this need  
to 19  
take risks and find adventure and excitement? 20  
A: There is a generalized tendency to like novel, exciting, or advent urous activities  
and  
21  
stimuli associated with such activities. The particular environment of each adolescent  
22  
influences the specific activities that he or she might try. For example, a boy might  
get 23  
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more interested in sports if his friends are also into sports. A girl might pursue  
"edgy" 1  
artistic activities because of the encouragement she gets from those around her. 2  
Q: What is the challenge for families, schools, and communities in raising  
adolescents 3  
who exhibit a need for sensation seeking? 4  
A: Much of the challenge is in finding ways to channel adolescents into safe and  
healthy  
5  
activities that also meet their needs for adventure and excitement. Adolescents who are  
6  
high in sensation seeking are particularly interested in shocking, surprising, or  
unusua l 7  
stimuli. In addition, they are readily attracted to things that seem associated with  
risk or 8

adventure. To reduce their risk of harm, families, schools, and communities need to provide them with exciting activities that meet their needs for stimulation, but minimize

10

the risks to their health and well-being. 11

9. Success in School, Sports, Social Activities 12

Q: Please describe an adolescent's psychological need to succeed in school, sports, and 13

social activities. 14

A: Many of the needs we have already discussed contribute to adolescents' interest in 15

success in school, sports, and social activities. Success in these settings contributes to 16

acceptance by peers and attractiveness to members of the opposite sex. Sports and social 17

activities are also fun and exciting. 18

Interest in being successful at sports and social activities also heightens 19 adolescents' fascination with sports and entertainment celebrities. Admiring those who 20

are successful in these areas is one way adolescents learn how to succeed in these realms. 21

It is common for a newly successful athlete, for example, to describe athletes that he or 22

she strongly admired while growing up. 23

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10. Rebellion Against Authority 1

Q: Please describe an adolescent's psychological need to rebel against authority. 2

A: The conflict between adolescents' desire for autonomy and the restrictions that schools 3

and parents put on them prompts some young people to become more rebellious. 4

Rebelliousness involves a tendency to resist what authority figures say the adolescent 5

should do and to embrace signs, symbols, and behaviors that communicate defiance of 6 conventional norms. 7

Q: What types of family and school conditions make rebellion more likely? 8

A: Families in which there is high conflict and low levels of positive parental involvement 9

are more likely to have rebellious adolescents. Rebellious behaviors include associating 10

with deviant peers, smoking, using other substances, and engaging in delinquent acts. 11

Restrictions that schools place on students may conflict with adolescents' desires 12 for autonomy. Adolescents with rebellious or aggressive tendencies often get into 13 increasing conflict with school authorities; such conflict further motivates their 14 rebelliousness. 15

Q: What do you find happens if a student is not doing well in school and also faces 16

rejection by their more popular peers? 17

A: These adolescents tend to join peer groups of similarly rebellious and generally 18 unpopular peers. For young people with little chance of succeeding in an academically 19

competitive school and among cliques of popular young people, rebellion is a way of 20 rejecting a social world that they cannot enter and thereby coping with social rejection. 21

Such adolescents are typically interested in signs, symbols, and behaviors they can adopt 22

that both defy authorities and show solidarity with their similarly rebellious peers. They

Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 53  
come to succeed with a peer group, but it is a peer group that supports deviant  
behavior. 1

D. Defendants' Cigarette Brand Marketing Images 2

Q: How are the psychological needs you have just described relevant to the question  
of 3

whether the images and themes Defendants use in marketing cigarette brands 4  
motivate adolescents to start smoking? 5

A: Adolescents are keenly, sometimes desperately, seeking information about how they  
can 6

satisfy the needs I just described. To the extent that the tobacco companies 7  
communicate—through the themes and images of their marketing—that adolescents can  
8

satisfy their needs by smoking one of the advertised brands, adolescents are vulnerable  
to

9  
that marketing. 10

Q: What cigarette brands have you concluded the tobacco companies are marketing  
in 11

ways that communicate that smoking the brand will satisfy one or more of the 12  
adolescent needs you have described? 13

A: Marlboro, Camel, Newport, Kool, Parliament, Virginia Slims, Salem, and Winston. 14

Q: Which tobacco companies market and sell these brands? 15

A: Marlboro, Parliament, and Virginia Slims are Philip Morris brands. Camel, Salem, and  
16

Winston are R.J. Reynolds brands. Newport is a Lorillard brand. Kool is a Brown & 17  
Williamson brand. I understand Brown & Williamson and R.J. Reynolds are now one 18  
company. 19

Q: What kind of images or themes do Defendants use in their marketing of these 20  
brands? 21

A: The tobacco companies' marketing imbues each of these brands with themes and  
images 22

relevant to one or more of the needs I have described. The images include self- 23

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confidence, popularity, peer approval, independence, attractiveness to the opposite  
sex, 1

masculinity, femininity, relaxation, excitement, adventure, skill in a wide variety of  
2

athletic, social, and work endeavors, and rebelliousness. 3

Q: What do you mean by the term "image," and how does the adolescent's image of  
4

smokers influence him or her to initiate or continue smoking? 5

A: Several types of images are important. These are: (1) the image that adolescents  
have

of 6  
themselves, (2) the image they have of smokers in general, and (3) the image they have  
of

7  
particular brands of cigarettes, and (4) the image they have of smokers of particular 8  
brands. The first, the self-image, is simply the way that people think about  
themselves. 9

Attributes such as "tough," "cool," "masculine," or "adventurous" could describe a  
self-

10  
image. We can also characterize each of the other three types of images: (1) of smokers  
11

in general, (2) of the brand, or (3) of the smoker of a brand, in terms of such a set  
of 12

attributes. 13

When the image of a smoker of a specific brand embodies attributes that the 14  
adolescent desires to have, he or she will be motivated to smoke that brand. For

example,

15  
if a young man desires to be manly and rugged and believes that smokers of Marlboro are  
16  
rugged, he will be motivated to smoke that brand in order to feel manly and to appear  
17  
manly to others. A document produced from the files of R. J. Reynolds, written by 18  
Claude Teague and dated February 2, 1973, describes the process rather well: 19  
The fragile, developing self- image of the young person needs all the 20  
support and enhancement it can get. Smoking may appear to enhance that 21  
self- image in a variety of ways. If one values . . . an adventurous, 22  
sophisticated adult image, smoking may enhance one's self-image. 23  
24  
502987357-7368 at 7364 (U.S. Exhibits 21,475; 78,782; and 77,237). 25  
Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 55  
1. Self-Image and Image of the Smoker 1  
Q: Dr. Biglan, would you give us an overview of the empirical evidence relevant to  
your 2  
conclusion that the Defendants' marketing makes cigarettes appealing to 3  
adolescents because it conveys to them that smoking those brands can fulfill their 4  
psychological needs? 5  
A: As I will show for each tobacco company, the tobacco companies make their youth- 6  
targeted brands appealing to adolescents by associating the brand and the smokers of  
the  
7  
brand with images that are highly desirable to most adolescents. The tobacco companies  
8  
have done considerable research on how to establish favorable images of their brands in  
9  
the minds of young people. I review that evidence in detail below. To respond to your  
10  
question, however, I will first review research done by psychologists and other public  
11  
health-oriented researchers that examines how image advertising speaks to the needs of  
12  
adolescents and thereby influences them to begin or to continue smoking. There is 13  
evidence that exposure to cigarette advertising increases the perception that smoking  
will  
14  
meet adolescents' needs. Not surprisingly, therefore, we find that adolescents  
generally  
15  
perceive that smoking brings a number of youth-relevant benefits and that these 16  
perceptions are stronger among those more exposed to cigarette advertising. Finally, 17  
there is evidence that those adolescents whose needs are particularly strong are more  
18  
likely to smoke. I will review the available evidence on these points for each of the  
19  
adolescent needs I have discussed above. 20  
Q: Is there peer-reviewed literature to support your conclusion that adolescents are  
21  
motivated to smoke cigarette brands because they believe doing so will enhance 22  
their self-image? 23  
Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 56  
A: Yes. Research shows that one of the primary benefits of smoking that many  
adolescents 1  
perceive is that it will enhance their self-image. 2  
Q: What does that research show? 3  
A: There are two types of findings. First, the evidence shows that adolescents have  
distinct 4  
images of adolescent smokers that include a number of attributes that adolescents  
desire 5  
to have. Second, it shows that adolescents are more likely to smoke if their self-  
image is

like the image they have of a smoker. Smoking reinforces the image of themselves that they are developing. 8

Q: Let's consider this research in detail. Have you prepared a demonstrative that identifies and summarizes these studies? 10

A: Yes. I have prepared Demonstrative 2 to identify and summarize these studies. 11

Q: Dr. Biglan, as we discuss topics in your testimony that relate to this demonstrative, 12

please refer to it in providing an answer. Can you briefly describe the studies? 13

A: Yes. I have listed seven peer-reviewed studies that examine adolescents' images of smokers and the role of the image of smokers in motivating adolescents to smoke. The first peer-reviewed study looked at differences in the perception of smoking and nonsmoking youth by systematically comparing adolescents' ratings of pictures of youth that were identical, except for the presence of a cigarette. Sixth graders saw the smokers as tougher, wanting to be with the group, drinking more, more interested in the opposite sex, less obedient, less good, trying to act older, less likely to do well at school, less wise, less desirable as a friend, and less healthy. Tenth graders viewed smokers as more tough, more likely to drink, more likely to act big, liking to be with the group more, older, less good, less healthy, and less wise. The majority of youth at both ages saw some of these attributes—being tough, having an interest in the opposite sex, and being with a group—as good things that they aspired to. The study also examined whether adolescents whose ideal self-image on each attribute was closer to that of a smoker than to that of a nonsmoker were more likely to say that they intended to smoke. There were no such relationships for sixth grade boys. However, for sixth grade girls, intentions to smoke were higher if the girls' self-image was closer to their image of a smoker on each of five attributes: wise, relaxed, is good, drinks, and obeys. In other words, girls who saw smokers as more like the way they wanted to be on these dimensions were more likely to intend to smoke. Among 10th graders, both boys and girls were more likely to intend to smoke if they saw smokers as closer to their ideal than they saw nonsmokers on being interested in the opposite sex. As the authors of this paper state: "[S]moking may be initiated by tenth graders as a way to establish an image of one who is interested in the opposite sex." This study is in Demonstrative 2 as Barton, Chassin, Presson, and Sherman, 1982. (U.S. Exhibit 72,847 at 1507).

Q: What do you conclude from this study? 16

A: The study shows that adolescents generally do have an image of adolescent smokers that is distinct from the image they have of nonsmoking adolescents. To the extent that

18

adolescents see smokers as having an attribute they desire for their own self- image, they

19

are motivated to smoke. 20

Q: And the second study? 21

A: The second peer-reviewed study was similar to the first and is in Demonstrative 2 as 22

Chassin, Presson, Sherman, and Margolis, 1988. It examined ratings by high school 23

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students of pictures of a boy holding one of the following: (a) a can of chewing tobacco,

1

(b) a pack of cigarettes, or (c) a bag of corn chips. Compared to the boy holding corn

2

chips, the smoker was seen as more rebellious, more brave, more rough/rugged, more 3 likely to use drugs and alcohol, as well as more phony, less good at school, more 4 unhappy, more lazy, more unhealthy, and getting along less well with family. The study

5

also examined whether adolescents' feelings about the smoker image were associated 6 with whether or not they smoked. The study reported that girls who admired the smoker 7 image more than the image of the nonsmoker were more likely to smoke. Boys who 8 admired the nonsmoker image more than the smoker image were less likely to smoke. 9

(U.S. Exhibit 72,869). 10

Q: What do you conclude from this study? 11

A: This study also shows that the image that most adolescents have of smokers contains a

12

number of elements that adolescents view as positive. The study also shows that 13 smoking behavior is related to the degree of admiration adolescents have for the images

14

of smokers and nonsmokers. Adolescents smoke when they feel doing so will help them

15

achieve positive attributes that they believe smokers have. 16

Q: How about the third study? 17

A: The third peer-reviewed study also compared adolescents' ratings of pictures of young

18

people that differed only in terms of whether the young person was holding a cigarette.

It

19

is in Demonstrative 2 as Amos, Currie, Gray, and Elton, 1998. The pictures used in this 20

study were from youth and style magazines. Adolescents rated smokers as higher on the

21

attributes tough/hard, tart/tarty (the study took place in Scotland ), druggy, wild, and 22

depressed. They rated nonsmokers as higher on healthy, rich, nice, fashionable, slim, and

23

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attractive. Smokers and nonsmokers differentially rated themselves in the same way that 1

they differentiated between smokers and nonsmokers in the photographs. That is, the 2 self-images of smokers were more like adolescents' image of smokers than like the 3 typical adolescent image of nonsmokers. In another paper on the same study, the authors

4

of this study reported that smokers were more attracted to negative traits than 5 nonsmokers were. The authors suggest that smoking is a strategy for gaining entry to 6 certain groups, such as those that are wild, rebellious, not interested in school, or into 7

taking risks. (U.S. Exhibit 77,283). 8

Q: Do you agree with that conclusion? 9

A: Yes, I do. As I testified earlier, many adolescents have given up trying to fit into the



10 mainstream, popular group and readily embrace a different image, one that they perceive  
11 will gain them entry into a peer group of kids generally rejected by the academically  
and  
12 socially successful peers. 13  
Q: Would you describe the fourth study? 14  
A: Yes. This peer-reviewed study took place among 9th and 10th grade adolescents who  
15 rated their real and ideal selves, images of smokers and nonsmokers, and their ideal  
date.  
16 Those who rated their self- image as closer to the smoking than the nonsmoking image in  
17 terms of toughness, foolishness, acting big, disobedient, and interested in the  
opposite sex  
18 were significantly more likely to report an intention to smoke. Moreover, nonsmokers 19  
whose ideal date was closer to that of the smoker than of the nonsmoker were more  
likely  
20 to intend to smoke. Finally, smokers differed from nonsmokers in that they had real  
self-  
21 concepts and ideal dates that were closer to the image of the smoker than to the image  
of  
22  
Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 60  
the nonsmoker. This study is in Demonstrative 2 as Chassin, Presson, Sherman, Corty, 1  
and Olshavsky, 1981. (U.S. Exhibit 72,872). 2  
Q: What do you conclude from this study? 3  
A: The study shows that, as adolescents develop their self- image, they will begin  
smoking if 4  
they perceive that smokers have an image like the one they have or want to have. These  
5 studies also show that adolescents can reinforce the image their peers have of them by  
6 smoking. 7  
Q: Why do you say that the studies show that adolescents can reinforce the image 8  
others have of them? 9  
A: Because the studies show that adolescents, in general, see smokers as different from  
10 nonsmokers on a number of dimensions, such as toughness. Thus, if an adolescent seeks  
11 to look tougher, he is correct in thinking his peers will see him as tougher if he  
smokes.  
12  
Q: Would you describe the fifth study? 13  
A: This is a peer-reviewed longitudinal study. A longitudinal study enables us to  
better  
14 assess whether having images of smoking at one point in time influences the onset of 15  
smoking at a later time. Such studies are important because they allow a stronger 16  
inference that the predictor actually contributed to the onset of smoking, as opposed  
to it  
17 just correlating with smoking. 18  
Q: Would you elaborate on that point? 19  
A: A longitudinal study allows the researcher to rule out the possibility that  
adolescents'  
20 positive image of smokers correlates with their smoking because the y first began 21

smoking themselves and only later formed a positive impression of smokers. It does this  
22

by ensuring that the positive image precedes smoking onset. If the positive impression  
23

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precedes the onset of smoking, we can have greater confidence that adolescents first  
form

1  
a positive image of smokers and take up smoking as a result. 2

Q: Would you now provide details of the fifth study? 3

A: In this longitudinal study, a sample of 1,222 fifth through eighth graders gave  
ratings

of 4  
their self- image and the image of a smoker. They rated the images of a smoker on three  
5

traits: cool, sociable, and smart. Teenage rs whose self- image was consistent with  
their 6

rated image of a smoker on any two of these three traits were significantly more likely  
to

7  
start smoking in the next academic year. Looking at individual traits, when young 8  
people's self-image was consistent with the way they had rated smokers on the traits 9  
involving "cool" and "smart," they were significantly more likely to take up smoking.

10  
This study is in Demonstrative 2 as Aloise-Young, Hennigan, and Graham, 1996. (U.S.

11  
Exhibit 77,282). 12

Q: What do you conclude from this study? 13

A: This longitudinal study found that the adolescents who thought of themselves as  
having 14

certain traits and who also believed that smokers had those traits began smoking. The  
15

study shows that the images adolescents have of smokers influence their smoking. When  
16

they see the image of a smoker as congruent with the image they have of themselves, 17  
they are motivated to take up smoking because it further reinforces their self-image.

18  
Adolescents smoke when they see smoking as beneficial in supporting their developing  
19  
self-image. 20

Q: Would you describe the sixth study? 21

A: This peer-reviewed study looked at how 7th, 9th, and 10th grade students felt about  
22

smoking. It found that students were more likely to smoke if they felt that smoking  
made

23  
Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 62  
them feel older. Having an image of maturity is highly desired by many adolescents. If  
1

they believe smoking will confer that benefit, adolescents who desire maturity will 2  
smoke. This study is in Demonstrative 2 as Perry, Murray, and Klepp, 1987. (U.S. 3  
Exhibit 72,778) 4

Q: Would you describe the last study in Demonstrative 2? 5

A: This study examined seventh grade students' ratings of their self- image, their  
ideal 6

image, their image of smokers, and their image of smokers depicted in advertising. 7  
Intention to smoke was highest for those with the smallest difference between their  
self- 8

image and the image of smokers. The analysis indicated that these youths had both less  
9

positive self- images and more positive images of smokers than other students did. The  
10

authors argue that "youth with relatively lower self-concepts, who do not perceive 11

themselves as distinctive in terms of being especially healthy, wise, tough, or interested

12

in the opposite sex may be drawn toward smoking as a way of 'adding something' to their identity." This study is in Demonstrative 2 as Burton, Sussman, Hansen, and Johnson, 1989 (U.S. Exhibit 77,293 at 661). 15

Q: Do these studies support your conclusion that Defendants' marketing contributes to adolescent smoking by portraying smokers of their brands as having particular

images? 18

A: Yes. These studies show that adolescents have certain favorable images of smokers, such as being tough and sociable. They are more likely to take up smoking if they perceive

smokers as having attributes they desire or attributes that are consistent with their view of

themselves. As my testimony will show, the key motivating images that adolescents have of smokers are precisely the ones conveyed in advertising for youth popular brands

21

Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 63 of cigarettes. Thus, to the extent that the tobacco companies shape adolescents' image

s 1

of smokers through their brand advertising, they influence adolescents to smoke. 2

Q: Some of the images that these studies found to be associated with smoking appear to be negative. For instance, in the first study, sixth graders viewed smokers, in part, as less good, less likely to do well at school, less wise, less desirable as a friend,

and less healthy. To an adult, do these traits seem like negative or positive attributes? 6

A: Presumably, most adults would see them as negative. 7

Q: Then why would these traits be ones that would motivate young people to smoke? 8

A: Not all of them are. However, many of the things that we strive not to have our teenagers like and admire are nonetheless attractive to many of them. What appears "negative" to

an adult may appear "positive" to a teenager. Take appearing to be "less good." As I have testified, many adolescents find themselves failing in school and facing rejection

from peers, which can lead some teenagers to become defiant. In this context, being "bad" is not a bad thing. Similarly, doing less well in school or being less wise and less

desirable as a friend can take on positive meanings for teenagers within a subculture of

adolescents who are rebellious. As we will see, marketing for several brands conveys that adolescents can have such a rebellious image by smoking that brand. 17

2. Popularity and Peer Acceptance 18

Q: You testified earlier how the changes in adolescence lead to an increased need to be popular and accepted by peers. Do these needs motivate adolescents to smoke? 20

A: They do. Due to the tobacco companies' marketing, many adolescents believe that one benefit of smoking will be enhanced popularity. 22

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Q: Did you prepare a demonstrative that summarizes the studies that show relationships between adolescent needs for popularity and smoking? 2

A: Yes, it is Demonstrative 3. 3

Q: Are all of these papers peer reviewed? 4

A: It is possible that the second one (Romer & Jamieson, 2001) (U.S. Exhibit 72,793) is not, 5

since it was a chapter in an edited book. All of the rest of the papers are peer reviewed. 6

Q: Using Demonstrative 3 as a reference, please describe this research. 7

A: The first peer-reviewed study looked at adolescents' beliefs about what cigarette advertising communicates about the benefits of smoking. It took place in a sample of 9 3,536 California adolescents aged 12 to 17 who had never smoked. The study found that 10

the majority of adolescent nonsmokers believed that cigarette advertisements indicated 11

that smoking would help people feel comfortable in social situations. Among 12- to 13- 12

year-olds, 60.5% believed this. Among 14 to 15-year-olds, the figure was 69.2%, and 13 among 16 to 17-year-olds, it was 72.9%. This study is in Demonstrative 3 as Evans, 14 Farkas, Gilpin, Berry, and Pierce, 1995. (U.S. Exhibit 72,886). 15

Q: Are there other studies with similar findings? 16

A: Yes. The second study involved a phone survey of 2,002 14- to 22-year-olds and a 17 sample of 1,504 persons ages 23 to 95. Exposure to cigarette advertising was higher 18 among 14- to 22-year-olds than among older persons. Adolescents had higher ratings of 19

images of smokers as popular, happy, and attractive than did older persons, and the 20 ratings were higher for adolescents with greater exposure to cigarette advertising. In 21

other words, cigarette advertising increased adolescents' perception that smokers are 22

Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 65 popular. This study is in Demonstrative 3 as Romer and Jamieson, 2001. (U.S. Exhibit 1 72,793). 2

Q: Are there other studies showing that adolescents perceive that smokers are more 3 popular? 4

A: Yes. One study I cited above looked at differences in the perception of smoking and 5 nonsmoking youth by systematically comparing ratings of pictures of youth that were 6

identical, except for the presence of a cigarette. It showed that smokers received 7 higher ratings than nonsmokers did on both (a) having an interest in the opposite sex and (b) 8

being with a group. The students rated each of these traits as good things. This study is 9 in Demonstrative 3 as Barton, Chassin, Presson, and Sherman, 1982. (U.S. Exhibit 10 72,847 11

Q: Do any of these studies show that adolescents are more likely to smoke if they 12 think 13

that smoking leads to social success? 14

A: Yes. One example is the fourth peer-reviewed study in Demonstrative 3, which found 15 that seventh, ninth, and tenth grade students who thought that smoking would help them 16

make friends were more likely to smoke themselves. The fifth peer-reviewed study in 17 Demonstrative 3 found the same thing, only with longitudinal data. Specifically, it found 18

that, among high school students, the belief that smoking will have positive social 19 consequences predicted whether or not an adolescent started smoking a year later. These 20 studies are Perry, Murray, and Klepp, 1987 (U.S. Exhibit 72,778) and Chassin, Presson, 21

Sherman, and Edwards, 1991, in Demonstrative 3 (U.S. Exhibit 72,867). 22

Q: Are there studies indicating that adolescents with a particularly high need for 23 popularity or social acceptance are more likely to smoke? 24

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A: Yes. The sixth peer-reviewed study in Demonstrative 3 looked at whether eighth grade 1 that, among high school students, the belief that smoking will have positive social 19 consequences predicted whether or not an adolescent started smoking a year later. These 20 studies are Perry, Murray, and Klepp, 1987 (U.S. Exhibit 72,778) and Chassin, Presson, 21

Sherman, and Edwards, 1991, in Demonstrative 3 (U.S. Exhibit 72,867). 22

Q: Are there studies indicating that adolescents with a particularly high need for 23 popularity or social acceptance are more likely to smoke? 24

Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 66

A: Yes. The sixth peer-reviewed study in Demonstrative 3 looked at whether eighth grade 1 that, among high school students, the belief that smoking will have positive social 19 consequences predicted whether or not an adolescent started smoking a year later. These 20 studies are Perry, Murray, and Klepp, 1987 (U.S. Exhibit 72,778) and Chassin, Presson, 21

students who were high in social conformity, a measure of "compliance and susceptibility

2

to social influences," were more likely to be smokers. It found that boys who were high

3

in social conformity were more likely to smoke. This study is Koval, Pederson, Mills, 4 McGrady, and Carvajal, 2000, in Demonstrative 3. (U.S. Exhibit 72,742). 5

Q: Is an adolescent more likely to smoke if his or her friends smoke? 6

A: Yes. That relationship is well established. The 1994 Surgeon General Report 7 summarized the evidence, and we have reported that relationship in a number of our 8 studies. (U.S. Exhibit 64,693). 9

Q: How do the studies you just reviewed relate to the basic finding that adolescents are 10

more likely to smoke if their friends smoke? 11

A: These studies show the motivation that underlies the relationship between adolescents

12

smoking and their friends smoking. Adolescents are more likely to smoke if they 13 perceive a social benefit to smoking and have a high need for social acceptance or 14 popularity. Adolescents tell us that the tobacco companies' advertising is communicating

15

that smoking will have such benefits. Thus, the tobacco companies are exploiting these

16

young people's needs for social acceptance by communicating that smoking will help 17 them achieve it. 18

Q: What, if anything, do Defendants state in their Final Proposed Findings of Fact on 19

this issue? 20

A: In their Final Proposed Findings of Fact, Defendants state, "Peer and family influences- 21

and not Defendants' marketing practices-have been established as the primary 22 predictors of smoking initiation among youth." Defendants' Final Proposed Findings of 23

Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 67 Fact (R. 3416; filed July 1, 2004) at 107. As I have testified, it is true that peers are an 1

important influence on adolescent smoking. The evidence of parental influences on 2 youth smoking behavior is more mixed, but there is certainly some evidence that parental

3

smoking and parental monitoring and limit setting are factors in adolescent smoking. 4 Yet, these findings do not mean that the Defendant's marketing has no influence 5

on adolescent smoking. On the contrary, as I will explain later in my testimony, 6 Defendants' marketing exploits adolescents' needs for popularity and acceptance by 7 communicating to them that smoking certain brands will help adolescents be popular. 8

Q: What do studies show about the effect of marketing and peer and family influences 9

on youth smoking behavior? 10

A: Studies show that marketing practices influence adolescent smoking even after 11 controlling for peer and parental influences. That is, studies that measure adolescent 12

smoking and parental smoking, as well as exposure to cigarette marketing, have found 13 that, even when peer and parental smoking are included in an analysis that predicts later

14

smoking or intention to smoke, exposure to cigarette marketing is a significant predictor.

15

Indeed, when researchers use advertising, and peer and parental influences, to predict 16

later smoking behavior or intention to smoke, exposure to advertising is a stronger 17 predictor than either peer or parental smoking. This means that, over and above any 18

influence of peers or parents on adolescent smoking, cigarette marketing influences 19  
adolescent smoking. I have cited these studies in Demonstrative 7 (U.S. Exhibit 17,561) 20

in the segment of my testimony having to do with adolescents' psychological needs. 21  
They include studies by Armstrong, deKlerk, Shean, Dunn, and Dollin, 1990 (U.S. 22  
Exhibit 72,840); Biener and Siegel, 2000 (U.S. Exhibit 77,118); and Pierce, Choi,  
Gilpin, 23

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Farkas, and Berry, 1998 (U.S. Exhibit 64,696). I should also note that seven of the  
eight 1

studies cited have been published since 1996. In short, there is strong and consistent  
2

research that contradicts the Defendants' assertions. 3

Moreover, the studies I cite in Demonstrative 7 (U.S. Exhibit 17,561) 4

underestimate the influence of marketing practices, since some of the influence of 5  
marketing is through its impact on peer groups and even parents. For example, as I have  
6

testified, the tobacco companies design cigarette marketing to influence the perception  
7

that popular people smoke specific brands. These marketing practices influence the 8  
entire peer group, not just individual adolescents. Peer group members come to feel  
that 9

smoking is the "in" thing. They are thus more likely to approve and admire someone 10  
who smokes a brand that marketing has led them to believe is smoked by popular people.  
11

Through this conditioning, the entire peer group supports and admires smoking. 12

Thus, when an adolescent is more likely to smoke if his or her friends smoke, it is, 13  
in part, because of the influence cigarette marketing has had on the entire peer group.  
In 14

other words, advertising that associates a brand with popularity conditions the entire  
peer 15

group to approve of those who smoke it. When adolescents correctly perceive that 16  
Marlboro is a popular brand, they can be confident that their peer group will accept  
them 17

if they smoke it, since their peers also see it as a brand that popular people smoke.  
18

3. Boys: Masculinity, Ruggedness, and Toughness 19

Q: You testified earlier how changes in adolescence lead boys to want to be seen and  
to 20

see themselves as masculine, rugged and tough. Is there research that shows that 21  
adolescent boys are more likely to smoke if they associate smoking with such 22  
attributes? 23

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A: Yes, one reason that boys smoke is to achieve a sense and an image of being  
masculine, 1

tough, and rugged. 2

Q: Is there research showing that cigarette advertising conveys that smoking will he  
lp 3

boys be more masculine, rugged, and tough? 4

A: Yes. I prepared Demonstrative 4, which lists the studies I have found that are  
relevant  
to 5

the relationship of masculinity and each of the other adolescent needs we have not yet  
6  
discussed in relation to adolescent smoking. I list the studies relevant to each need,  
in 7

parallel to the needs discussed here. 8

All of the studies in Demonstrative 4, with the possible exception of the book 9  
chapter by Romer and Jamieson, 2001 (U.S. Exhibit 74,029), are peer-reviewed articles.

10

Q: Using Demonstrative 4 as a reference, please describe the research. 11

A: The studies on images included in Demonstrative 4 show that adolescents are more likely 12

to smoke or intend to smoke if they attribute characteristics such as "tough" and "rugged" 13

to smokers. For example, one peer-reviewed study found that, on average, adolescents 14 had an image of smokers as more tough, an attribute they viewed positively. This study 15

is Barton, Chassin, Presson, and Sherman, 1982 (U.S. Exhibit 72,847), in Demonstrative 16

4. 17

Another peer-reviewed study found that, when adolescents rated their ideal self as 18 like that of a smoker on attributes such as tough, foolish, acts big, disobedient, and 19

interested in the opposite sex, they were more likely to report that they intended to 20

smoke. This study is Chassin, Presson, Sherman, Corty, and Olshavsky, 1981 (U.S. 21 Exhibit 72,872), in Demonstrative 4. 22

Q: Why would this be? 23

Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 70

A: To some extent it is because most boys believe that characteristics of this sort will 1

make 1 them more attractive to the opposite sex and admired by other boys and they believe 2 smoking will give them these characteristics. 3

Q: Does Defendants' marketing communicate these characteristics? 4

A: Yes, as we will see, much cigarette advertising, especially for Marlboro, Camel, and 5

Kool, focuses on conveying that smokers of those brands are masculine, tough, and 6 rugged. 7

4. Girls: Attractiveness 8

Q: You described earlier how the changes that occur in adolescence lead to an 9 increased need for girls to feel and be attractive. Is there research showing that 10 cigarette advertising conveys that smoking will help girls be more attractive? 11

A: Yes. These studies are also included in Demonstrative 4. 12

Q: Using Demonstrative 4 as a reference, please describe the research. 13

A: The first study concerning girls found that cigarette advertisements targeting women are 14

significantly more likely to show smokers as lean and attractive than are advertisements 15

not targeting women. This study is in Demonstrative 4 as Krupka, Vener, and Richmond, 16

1990 (U.S. Exhibit 72,745). 17

A second peer-reviewed study listed in Demonstrative 4 showed that images of 18 young women as attractive, sexy, independent, and sociable are common in cigarette 19 advertising. This study is King, Reid, Moon, and Ringold, 1992 (U.S. Exhibit 72,738), in 20

20

Demonstrative 4. 21

A third peer-reviewed study found that billboard advertisements for tobacco 22 depicted models as having sex appeal more often than did advertisements for other 23

Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 71 products, except alcohol. Finally, a peer-reviewed study I cited earlier of California 1

adolescents reported that 43.9% of 12- to 17-year-old girls who had never smoked felt 2 that cigarette advertisements conveyed that smoking would help them stay thin. These 3 two studies are in Demonstrative 4 as Schooler, Feighery, and Flora, 1996, and Evans, 4 Farkas, Gilpin, Berry, and Pierce, 1995 (U.S. Exhibit 72,885), respectively. 5

Q: Are there other studies that show that the communication of these themes is 6 associated with smoking? 7

A: Yes. One peer-reviewed study looked at opinions about cigarette advertising in a sample of 258 15- year-old students in England. More regular smokers than nonsmokers rated cigarette advertisements as glamorous, exciting, interesting, and eye-catching. Smokers were more likely than nonsmokers were to have a positive opinion of advertisements. This was especially true for those who had positive opinions about the two best-selling brands, Benson & Hedges and John Player Special. This study is Potts, Gillies, and Herbert, 1986 (U.S. Exhibit 77,340), cited in Demonstrative 4.

Q: How does this study inform your conclusions in this case?

A: It is consistent with my conclusion that advertising influences some adolescents to smoke because they associate smoking with these positive attributes. Given that this study looked at the concurrent relationship between opinions about advertisements and smoking, it is possible that the adolescents first took up smoking and only then saw advertisements as communicating these positive attributes. However, this seems unlikely because of evidence I discuss below that shows that cigarette advertising does increase adolescents' perceptions of smoking as having positive attributes. At a minimum, the Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 72 study does show that advertising reinforces adolescents' views of smoking as being glamorous, etc.

Q: Are there studies that show that girls who are concerned about their weight or other aspects of their attractiveness are more likely to take up smoking?

A: Yes. French and Perry, 1996 (U.S. Exhibit 72,897), cited in Demonstrative 4, identified a number of influences to smoke that are unique to young women. These include being attractive, well dressed, sexy, and healthy. They also reviewed studies indicating that weight concerns motivate young women to smoke. One peer-reviewed study found that eighth grade girls were more likely to be smokers if they believed that smoking would improve their appearance. This study is Koval, Pederson, Mills, McGrady, and Carvajal, 2000 (U.S. Exhibit 72,742), cited in Demonstrative 4.

Another peer-reviewed study found that girls who were smokers were significantly more likely than nonsmoking girls to be trying to lose weight, have fears of gaining weight, want to be thin, and have symptoms of an eating disorder. Moreover, they found that girls with substantial concerns about their weight were about twice as likely to begin smoking over the following year as girls without weight concerns. This study is in Demonstrative 4 as French, Perry, Leon, and Fulkerson, 1994 (U.S. Exhibit 72,895).

A peer-reviewed study conducted among 16,000 students aged 9-19 in northern England found that the students who smoked the most were most likely to agree that smoking controls weight, while those who had never smoked were least likely to agree. More girls than boys agreed with this statement among the 13- to 16-year-olds surveyed. This study is Charlton, 1984 (U.S. Exhibit 72,863), in Demonstrative 4.

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Finally, a peer-reviewed study I cited earlier, which surveyed 14- to 22-year-olds, found that girls who smoked were significantly more likely than nonsmokers to believe that smoking would reduce their weight. This study, in Demonstrative 4, is Romer and Jamieson, 2001 (U.S. Exhibit 74,029).

Q: What do you conclude from this research?

A: Girls concerned about their weight or appearance are particularly vulnerable to



cigarette 6

advertising that promises that smoking will help them be thinner and more attractive. 7  
Cigarette advertising frequently conveys this message. Thus, girls who are concerned 8  
about their weight or appearance are more likely to smoke. In a world in which  
cigarette

9

advertising did not promise these benefits, fewer adolescent girls would smoke. 10

5. Stress, Anxiety, and Depression 11

Q: You described earlier how changes experienced in adolescence lead to an  
increased 12

need to deal with stress, anxiety, and depression. Is there evidence that cigarette 13  
advertising conveys to adolescents that smoking helps them deal with these feelings?

14

A: Yes. Public health research shows that cigarette advertising communicates that  
smoking 15

can help one deal with stress and unpleasant emotions. The peer-reviewed study of 16  
nonsmoking California adolescents, which I cited previously, found that 60 to 73 % of

17

these nonsmokers (depending on age group) felt that cigarette advertisements 18  
communicated that smoking would help them relax; 58 to 67% felt that cigarette 19  
advertisements indicated that smoking would help them reduce stress; and 45 to 50.8%

20

said advertisements communicated that smoking would reduce boredom. This study is in  
21

Demonstrative 4 as Evans et al., 1995 (U.S. Exhibit 72,885). 22

Q: Are there other similar studies? 23

Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 74

A: Yes. The peer-reviewed study of 14- to 22-year-olds cited previously found that the  
1

image of smokers as relaxed rose during adolescence and was significantly higher for 2  
those who reported exposure to cigarette advertising. Moreover, those who had an image

3

of smoking as being relaxing perceived less risk to smoking and had feelings about 4  
smoking that were more favorable towards it. This study, Romer and Jamieson, 2001 5  
(U.S. Exhibit 74,029), is in Demonstrative 4. 6

Q: Is there other research that supports your conclusion that some adolescents are 7  
motivated to smoke because they perceive that it will help them reduce stress? 8

A: One peer-reviewed study, which I cited earlier, found that middle and high school 9  
students were more likely to be smokers if they thought that smoking would help them 10  
when they were bored or lonely, when they needed to solve personal problems, or when

11

they needed personal energy. This study is Perry et al., 1987 (U.S. Exhibit 72,778), in  
12

Demonstrative 4. 13

Q: Are there other studies of this sort? 14

A: There are a number of peer-reviewed studies that show that adolescents experiencing  
15

high levels of distressing emotions are more likely to smoke. In two studies of the  
same

16

sample of adolescents, one while they were in sixth grade and the other when they were  
17

in eighth grade, it was found that young people experiencing stress are more likely to  
be

18

smokers. These two studies (Koval & Pederson, 1999, U.S. Exhibit 72,741; Koval et al.,  
19

2000, U.S. Exhibit 72,742) are in Demonstrative 4. 20

In a longitudinal study of continuation high school students, researchers found 21  
that adolescents experiencing higher levels of stress were more likely to become  
regular

22

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smokers. This study (Skara, Sussman, & Dent, 2001, U.S. Exhibit 72,800) is in 1  
Demonstrative 4. 2

Q: Is adolescent depression related to smoking? 3

A: Yes. Several studies have reported that adolescents are more likely to be smokers if they 4

are depressed. One peer-reviewed study in a nationally representative sample of 4,023 5  
adolescents aged 12 to 17 years found that girls who were depressed were more likely 6  
than those who were not to smoke. This study, in Demonstrative 4, is Acierno, 7  
Kilpatrick, Resnick, Saunders, DeArellano, and Best, 2000. 8

A second peer-reviewed study found a relationship between depression and 9  
smoking for boys, but not for girls. Two articles describing this study are in 10  
Demonstrative 4. They are Koval and Pederson, 1999 (U.S. Exhibit 72,741) and Koval et 11  
al., 2000 (U.S. Exhibit 72,742). 12

A third peer-reviewed study found that high school freshmen were more likely to 13  
be smokers if they were depressed. This was especially true if they were receptive to 14

cigarette advertising. Researchers measured the teenagers' receptivity to advertising 15

based on whether they had a favorite advertisement and whether they owned cigarette 16  
promotional items. This study is in Demonstrative 4 as Tercyak, Goldman, Smith, and 17  
Audrain, 2002 (U.S. Exhibit 77,352). 18

Q: What do you conclude from the Tercyak study you just mentioned? 19

A: The study shows that depressed adolescents who are receptive to cigarette 20  
advertising 21

are particularly vulnerable to such advertising. As we will see, cigarette advertising 22

conveys that smoking will make one happier and it also promises to help young people 23

with other issues that are sources of their depression, such as peer rejection. The 24  
fact that 25

Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 76  
depressed adolescents who had greater exposure to cigarette advertising were more 26  
likely 27

1  
to smoke shows that depressed adolescents who are reached by the tobacco companies' 2  
advertising are particularly vulnerable. 3

6. Risk Taking, Excitement, Fun, and Adventure 4

Q: You described earlier how the changes that occur in adolescence lead to an 5  
increased need for adolescents to experience excitement, fun, and adventure. Is 6  
there research that shows that cigarette advertising conveys to adolescents that they 7  
7

can achieve these benefits? 8

A: Yes. In addition to the voluminous research by the tobacco companies showing that 9  
their 10

advertising conveys that smoking will provide these benefits, there are peer-reviewed 11  
12

studies done by public health researchers that show that adolescents get the message 13  
from 14

15  
these advertisements. 16

In a study I cited above, 68 to 76% of nonsmoking California adolescents felt that 17  
cigarette advertisements conveyed that smoking is enjoyable. This study is in 18  
Demonstrative 4 as Evans et al., 1995 (U.S. Exhibit 72,885). 19

In addition, there is evidence that billboard advertisements for tobacco, more than 20  
advertisements for other products (besides alcohol), associated smoking with fun or 21  
exciting activities including vacationing, recreation, sports, an active lifestyle, and 22  
18

adventure or risk. This study is in Demonstrative 4 as Schooler, Basil, and Altman, 23  
1996 24

19

(U.S. Exhibit 72,798). 20

A study of magazine advertisements for cigarettes indicated that recreation and 21  
adventure were common themes of cigarette advertisements for both male and female 22  
Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 77  
oriented magazines. This study is in Demonstrative 4 as King, Reid, Moon, and Ringold, 1

1992 (U.S. Exhibit 72,738). 2

Q: Is there scientific research that indicates that youth who perceive that smoking is 3

exciting are more likely to smoke? 4

A: Yes. A peer-reviewed study I cited earlier of 15- year-olds found that more regular 5

smokers than nonsmokers rated cigarette advertisements as exciting and witty. This 6  
study is in Demonstrative 4 as Potts et al., 1986 (U.S. Exhibit 77,340). 7

Another peer-reviewed study showed that adolescents who smoke are more likely 8  
than nonsmokers are to say that smoking will help the m have fun. This study appears in 9

Demonstrative 4 as Perry et al., 1987 (U.S. Exhibit 77,778). 10

Q: Is there other research that supports your conclusion that adolescents who have 11

high needs for excitement are more likely to smoke? 12

A: Yes. With respect to sensation or novelty seeking and risk taking, there is 13  
considerable

evidence. A peer-reviewed study of 1,841 17- to 19-year-olds found that sensation 14  
seeking was significantly related to smoking. This peer-reviewed study is Kraft and 15  
Rise,

1994 (U.S. Exhibit 72,743), in Demonstrative 4. 16

Another study of 8th and 11th grade students found that cigarette smoking was 17  
significantly higher among those who were elevated on the sensation-seeking factor. 18  
This peer-reviewed study also included measures of peer and parental influences on 19  
smoking. Even when controlling for those variables, researchers found sensation seeking 20

correlated with smoking. This means that the influence of sensation seeking is over and 21

above any influence of peer or parents. This peer-reviewed study appears in 22  
Demonstrative 4 as Kopstein, Crum, Celentano, and Martin, 2001 (U.S. Exhibit 72,740). 23

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A study of 1,051 10th-grade students found that those who were high in "novelty 1  
seeking" were more likely to be smokers. This peer-reviewed study, Tercyak and 2  
Audrain-McGovern, 2003, is in Demonstrative 4. 3

In a longitudinal study, 5th-grade students who were high in risk taking were 4  
more likely to be daily smokers in 12th grade. This study is noteworthy because of the 5

length of time between the measurement of risk taking and the assessment of smoking. 6  
Apparently, risk taking makes young people vulnerable to try the risky practice of 7  
smoking over a considerable period of time. This peer-reviewed study is in 8

Demonstrative 4 as Burt, Dinh, Peterson, and Sarason, 2000 (U.S. Exhibit 72,856). 9

Another longitudinal study found continuation high school students to be more 10  
likely to be regular smokers if they were high in sensation seeking, male, and 11  
perpetrators

12  
of violence. This peer-reviewed study appears in Demonstrative 4 as Skara et al., 2001 12  
(U.S. Exhibit 72,800). 13

Q: Is there evidence that adolescents who are high in novelty seeking are more 14  
receptive to cigarette advertising? 15

A: Yes. A peer-reviewed study of 1,071 high school freshmen found that higher levels of 16

novelty seeking were associated with greater receptivity to tobacco advertising. Thus, 17

sensation or novelty seekers are particularly likely to encounter and like cigarette 18  
advertising. This study appears in Demonstrative 4 as Audrain-McGovern et al., 2003. 19  
Q: How are these studies relevant to your conclusion that the Defendants'  
marketing 20

influences adolescents to smoke? 21

A: As some of the studies I reviewed here and the tobacco companies' own documents 22  
show, much cigarette marketing associates the tobacco companies' brands with themes  
23

Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 79  
and images of fun and excitement. The studies I have just described show that sensation  
1

seeking and risk-taking adolescents—in the current marketing environment—are 2  
particularly at risk to smoke. By associating their brands with themes of excitement,  
the 3

tobacco companies are particularly effective in reaching these young people and 4  
motivating them to smoke. 5

7. Rebellion Against Authority 6

Q: Is there research that supports your conclusion that rebellious adolescents are  
more 7

likely to smoke? 8

A: Yes. A study of sixth graders found that rebelliousness concurrently correlated with  
9

smoking for both boys and girls, even when maternal or paternal smoking was controlled.  
10

In an analysis of data from the same sample of students taken when they were in eighth  
11

grade, rebelliousness was associated with smoking. Here, too, parental and peer smoking  
12

were controlled, so we can infer that rebelliousness is associated with smoking over  
and  
13

above any influence of parents or peers. This study is in Demonstrative 4 as Koval and  
14

Pederson, 1999 (U.S. Exhibit 72,741). 15

Stronger evidence comes from a study that assessed rebelliousness in fifth grade 16  
in a sample of 3,130 fifth graders. Those who were high in rebelliousness at that time  
17

were significantly more likely to be smokers in 12th grade. This peer-reviewed study is  
in  
18

Demonstrative 4 as Burt, Dinh, Peterson, and Sarason, 2000 (U.S. Exhibit 72,856). 19

Q: How are these findings relevant to your conclusions in this case? 20

A: They show that rebellious youth are at high risk to take up smoking. Any information  
21

they receive that conveys to them that rebellious people smoke or that smoking would 22

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enhance their image as a rebel makes them more likely to take up smoking. And, as we 1  
shall see, much cigarette advertising communicates this message. 2

Q: Are there other studies on this topic? 3

A: One peer-reviewed study relevant to this topic is a study of the prediction of  
smoking  
4

over a one-year period among middle school students. It found that expectations for 5  
academic success had a strong negative correlation with smoking initiation. In other 6  
words, student s who expect to do poorly in school are more likely to take up smoking.  
7

This finding is consistent with what I said earlier about some adolescents beginning to  
8

have trouble academically in middle school. Their failure prompts them to redefine who  
9

they are. Given the images of smokers that are available to them, they can adopt the 10  
image of a smoker, which, as I described above, is widely seen as not good in school,  
but

11

as tough and sociable. Thus, taking up smoking helps some young people to cope with 12  
their academic failure, by helping to define a new self-image. This study is in 13  
Demonstrative 4 as Chassin, Presson, Sherman, & Edwards, 1991 (U.S. Exhibit 72,867).

14

8. Favorable Attitudes toward Smoking and Cigarette Advertising Predict 15  
Smoking 16

17

Q: Dr. Biglan, what other research has informed your conclusions in this case? 18

A: There are studies of the relationship between attitudes toward smoking and cigarette 19

advertising that indicate that adolescents are motivated to smoke by their perception  
of 20

the value of smoking for achieving desired outcomes. There are also studies of the 21  
relationship between attitudes toward cigarette advertising and smoking behavior. 22

Q: Would you define the term "attitude?" 23

A: Attitudes are general measures of the favorability or unfavorability that a person  
has

24

toward an "attitude object." The attitude object in the present case could be smoking  
or

25

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cigarette advertising. Unlike the studies I discussed previously, which examine the 1  
relationship between smoking and specific perceptions of smoking or smokers, the 2  
studies of attitudes I discuss now look at the degree to which a generally favorable 3  
attitude toward smoking or favorable reactions to cigarette advertising motivate  
smoking.

4

Q: Have you made a demonstrative of the studies involving these relationships? 5

A: Yes, I have labeled it Demonstrative 5. 6

Q: Please use Demonstrative 5 as a reference and tell the Court what these studies 7  
show. 8

A: I listed seven studies, all peer reviewed, with the possible exception of the book  
chapter 9

by Romer & Jamieson, 2001 (U.S. Exhibit 72,932). The first two studies show simply 10  
that adolescents' ratings of their attitudes toward smoking are associated with either  
11

current smoking behavior or with their intention to smoke. These two studies are cited  
in

12

Demonstrative 5 as Romer and Jamieson, 2001 (U.S. Exhibit 72,932), and Chassin, 13  
Corty, Presson, Olshavsky, Bensenberg, and Sherman, 1981 (U.S. Exhibit 77,296), 14  
respectively. 15

Q: What do you conclude from these studies? 16

A: They show that positive attitudes toward smoking are associated with smoking, and  
they 17

confirm my conclusion that tobacco companies motivate adolescents to smoke by 18  
influencing them to have favorable attitudes toward smoking. However, because the 19  
attitudes and the smoking measure were assessed at the same time, we cannot rule out  
the

20

possibility that the relationships were due to current smokers having developed more 21  
favorable attitudes toward smoking after they began smoking, rather than their  
favorable

22

attitudes leading them to smoke. 23

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Q: What do you conclude from the other studies in Demonstrative 5? 1

A: The third peer-reviewed study was longitudinal. It tried to predict smoking from  
attitudes 2

toward smoking among 2,818 adolescents who were in 6th through 11th grade at the outset  
3

of the study. Adolescents were asked whether smoking was fun, pleasant, or nice. For both those students who had never tried smoking and those who had experimented with 5 smoking, their attitudes toward smoking at the first assessment predicted whether or not 6

they were smoking a year later. This study allows us to rule out the possibility that the 7

relationships we saw in the first two studies are due simply to smokers becoming more 8

favorable to smoking after they take up smoking. Rather, it appears that having favorable 9

attitudes toward smoking makes adolescents more likely to subsequently take it up. 10 I should also say that the study found that rated intentions to smoke predicted 11 smoking a year later. A number of studies also measure the impact of advertising on 12 intentions to smoke, so it is important to note that such intentions are good predictors of 13

later smoking. This study is in Demonstrative 5 as Chassin, Presson, Sherman, Corty, 14 and Olshavsky, 1984 (U.S. Exhibit 77,870). 15

Q: Would you please describe the fourth study? 16

A: The fourth peer-reviewed study was a further examination of the ability to predict 17

smoking from these attitude measures. It studied the same sample as the study I just 18 mentioned, but this 1991 study examined whether it was possible to predict smoking 19 seven or eight years later. For both adolescents assessed in middle school and those 20 assessed in high school, their attitudes toward smoking predicted whether they were 21 smokers seven or eight years later. This was true even after the analysis statistically 22

controlled for a friends' smoking. In other words, positive attitudes toward smoking 23 Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 83

predicted later smoking over and above the influence of friends' smoking. This study is 1

in Demonstrative 5 as Chassin, Presson, Sherman, and Edwards, 1991 (U.S. Exhibit 2 72,868). 3

Q: Would you tell the Court about the fifth study? 4

A: This peer-reviewed study, as well as the two remaining studies, focused on attitudes 5

toward cigarette advertising to see if such attitudes would predict smoking. The fifth 6

study obtained ratings of cigarette advertisements for five brands from 534 adolescents 7

on how well they liked the advertisements, whether they made smoking appealing, and 8 whether the advertisement made them want to smoke. Smokers were more likely than 9 nonsmokers were to like the advertisements. They were also more likely to say that 10 Marlboro and Camel advertisements made smoking more appealing. And they were 11 more likely to say that each advertisement made them want to smoke. This study appears 12

in Demonstrative 5 as Arnett and Terhanian, 1998 (U.S. Exhibit 72,843). 13

Q: Would you tell the Court about the sixth study? 14

A: This peer-reviewed study got ratings of advertisements for five youth-popular cigarette 15

brands (Marlboro, Newport, Camel, Kool, and Winston) and an advertisement for one 16 non-youth brand (Merit). The sample consisted of 400 adolescents aged 12 to 17. The 17 adolescents rated how well they liked the advertisements and how much they thought 18 those advertisements made smoking appealing. Though it was not true for every 19 advertisement, in most cases, adolescents who liked an advertisement were more likely to 20

be smokers. The results were similar, but not as strong, for the relationship between 21

ratings that an advertisement made smoking appealing and the smoking status of 22 respondents. This study is in Demonstrative 5 as Arnett, 2001. 23

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I should point out that both the fifth and the sixth study involved what we call 1  
"concurrent correlations." In other words, the researchers assessed both liking for the  
2  
advertisements and smoking behavior at the same time. Based on these studies alone, we  
3  
cannot rule out the possibility that the adolescents first start smoking and then  
develop a

4  
liking for cigarette advertisements. However, the results of the seventh study make  
this 5  
interpretation implausible. 6

Q: Would you tell us about the seventh study? 7

A: The seventh peer-reviewed study in Demonstrative 5 obtained ratings of attitudes  
toward 8  
cigarette advertisements and analyzed whether adolescent smoking could be predicted a 9  
year later based on these attitudes, as well as on family and peer smoking. The study  
10  
found that those adolescents with more favorable attitudes toward cigarette advertising  
at

11  
the first assessment were more likely to take up smoking by the second assessment. This  
12

was true even when the researchers controlled for peer and family smoking. In other 13  
words, liking for cigarette advertisements predicted later smoking over and above any  
14

influence of peers or families. This study is in Demonstrative 5 as Alexander,  
Callcott, 15

Dobson, Hards, Lloyd, O'Connell, and Leeder, 1983 (U.S. Exhibit 72,839). The 16  
longitudinal nature of this study provides greater confidence that adolescents first  
form

17  
favorable attitudes toward cigarette advertisements and cigarette smoking and only then  
18  
take up smoking. 19

Q: How is this line of research consistent with your conclusion that Defendants  
market 20

to adolescents to meet their psychological needs? 21

A: It shows that adolescents' favorable attitudes toward smoking and cigarette  
advertising 22

contribute to their smoking. To the extent that the tobacco companies' marketing 23  
Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 85  
produces positive attitudes toward their cigarette brands, it motivates adolescents to  
1

smoke them. Establishing positive attitudes toward smoking a specific brand is a  
critical

2  
step in motivating adolescents to smoke that brand. The evidence I have just discussed  
3  
indicates that it is specifically through the advertising that adolescents form  
favorable 4

attitudes toward smoking and that these favorable attitudes gained from cigarette 5  
advertisements predict whether the adolescents will smoke. 6

9. Impact of Cigarette Advertisements on Adolescents' Images of Smokers 7  
8

Q: Are there studies of whether Defendants' cigarette marketing influences the  
images 9  
that adolescents have of smokers? 10

A: Yes. The tobacco companies' own internal research shows the impact of their  
marketing 11

on the images of smokers and public health researchers have conducted such studies. 12  
Q: Did you prepare a demonstrative that summarizes these studies? 13

A: Yes. Demonstrative 6 contains these studies, all of which are peer-reviewed. 14

Q: Would you describe these studies? 15

A: The first study listed in Demonstrative 6 examined whether children and adolescents age 16

6 to 17 could identify brands of cigarettes after looking at advertisements that had the 17

brand name removed. Across the three brands tested, 38 to 83% of 12- and 13-year-olds 18

could identify the brand. Among older adolescents, the percentages were 52 to 95%. 19 Thus, the majority of the adolescents were familiar with the advertisements. 20

The young people then matched the advertisements to thumbnail sketches of the 21 type of person who smoked the brand. By the age of 10, students were able to match 22 brands to thumbnail sketches of the smoker of that brand at better than chance levels. 23

This shows that, thanks to the advertisements, the students had formed an image of the 24

Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 86 smoker of each brand. This first study is in Demonstrative 6 as Aitken, Leathar, and 1 O'Hagan, 1987 (U.S. Exhibit 77,281). 2

Q: Would you describe the second study? 3

A: The second peer-reviewed study is one I discussed earlier, regarding attitudes toward 4

cigarette advertising. This study presented adolescents with advertisements for five 5 brands of cigarette: Camel, Marlboro, Kool, Benson & Hedges, and Lucky Strike. Five 6 hundred thirty- four students were asked to rate the advertisements on how frequently they 7

had seen them, whether they liked them, and how much they thought the advertisements 8

made smoking appealing. The students had seen Marlboro and Camel advertisements 9 more frequently than they saw others, and Marlboro and Camel advertisements were 10 liked by larger proportions of subjects (44% for Marlboro, 64% for Camel) than were the 11

other advertisements (Kool, 38%; Benson & Hedges, 26%; Lucky Strike, 26%). The 12 Marlboro and Camel advertisements were more appealing than advertisements for other 13

cigarettes were. Because none of these comparisons included statistical analysis, we 14 cannot be sure that the differences were statistically reliable. Nonetheless, the results are 15

consistent with the fact that Camel and Marlboro are two of the most popular brands 16 among youth. These results are consistent with my conclusion that these brands are 17 popular because many adolescents see and like their advertising. This study is in 18 Demonstrative 6 as Arnett and Terhanian, 1998 (U.S. Exhibit 72,842). 19

Q: Would you describe the third study? 20

A: The third peer-reviewed study is also one I discussed previously that measured reactions 21

to cigarette advertisements from 400 12- to 17-year-olds. The adolescents looked at two 22

advertisements for each of five youth-popular brands (Marlboro, Newport, Camel, Kool, 23

Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 87 and Winston) and an advertisement for one non- youth brand (Merit). These adolescents 1

liked all but two of the advertisements for the youth-popular brands significantly more 2

than they did the Merit advertisement. The teenagers rated one Marlboro advertisement, 3

two Camel advertisements, and a Kool advertisement as making smoking significantly 4 more appealing than the Merit advertisement did. Finally, they significantly liked the 5

Marlboro advertisements more than they did the advertisements for Newport. This study 6

is in Demonstrative 6 as Arnett, 2001. 7

Q: How are these last two studies relevant to your conclusions in this case? 8



A: Both show that advertisements for cigarettes have a positive impact on many adolescents. 9

The study by Arnett, 2001, shows that adolescents like the advertisements for the brands

10  
that target younger smokers better than they do those not targeting young smokers and  
11  
that a number of those advertisements made smoking more appealing than did the Merit  
12  
advertisement. 13

I should note that, strictly speaking, the latter study also provides experimental 14  
evidence of the impact of these advertisements. The comparison between reactions to the  
15

youth-popular brands' advertisements and the Merit advertisements is an example of a 16  
"within subjects" design. It controls for other possible influences on liking for the  
17

advertisements. We can be confident that the greater liking for the youth-popular 18  
advertisements was due to the advertisements, not to some characteristics of the  
teenagers

19  
who saw them. 20

Q: How about the fourth study? 21

A: The fourth peer-reviewed study assessed brand recognition and liking among 386  
eighth- 22

grade students for cigarette advertisements that had brand information removed. They 23  
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found that students were able to identify the advertisements for Camel (71.7%),  
Marlboro

1  
(62.5%), and Newport (31.4%) more than for Capri, Kool, Misty, and Virginia Slims. 2  
Students who were susceptible nonsmokers (that is, could not rule out the possibility  
of 3

smoking at some point) liked cigarette advertisements significantly more than did 4  
nonsmokers and to the same extent as current smokers. This study is in Demonstrative 6  
5

as Unger, Johnson, and Rohrbach, 1995 (U.S. Exhibit 72,819). 6

Q: What do you conclude from this study? 7

A: The study is consistent with the conclusion that exposure to cigarette  
advertisements 8

increases susceptibility to smoking. It is possible, however, that the results are due  
to 9

those who are susceptible to taking up smoking being interested in and liking the 10  
advertisements due to that susceptibility. 11

Q: How could you determine whether it was the advertisements influencing 12  
susceptibility or susceptibility influencing recognition of and liking for 13  
advertisements? 14

A: One could determine this through experimental manipulation of exposure to cigarette  
15  
advertisements. 16

Q: Have such studies taken place? 17

A: Yes. Studies 5 through 9 listed on Demonstrative 6 all involve experimental  
evaluations 18

of the impact of cigarette advertising on adolescents. These studies control for other  
19

possible influences by randomly assigning adolescents to receive or not receive an 20  
advertising exposure. In this way, the design ensures that the adolescents in the  
different

21  
conditions are equivalent at the outset. Thus, we can be confident that any differences  
in

22  
smoker images between the adolescents in different exposure conditions are due to the  
23

Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 89  
advertisements and other marketing materials to which they were exposed. Studies that 1  
show that exposure to advertisements is correlated with concurrent smoking behavior or 2

intent to smoke could find such a relationship because those who smoke are more 3  
inclined to look at and like cigarette advertisements. However, in the studies to be 4  
discussed here, researchers experimentally manipulated exposure to the advertisements. 5

Accordingly, we can rule out any differences in the effects of exposure to advertising 6

being due to adolescents prior experiences with smoking and can be confident that, if 7  
exposure to advertising results in more positive attitudes or images of smokers, it is 8  
due 8

to the exposure. 9

Q: Would you describe the fifth study? 10

A: The fifth peer-reviewed study experimentally evaluated the impact of cigarette 11  
magazine 11

advertisements on adolescents' attitudes toward smoking. Researchers randomly 12  
assigned 178 adolescents to look at a magazine with four cigarette advertisements or at 13

the same magazine without any cigarette advertisements. The students had only five 14  
minutes to review the entire magazine, but researchers asked them to look at all 15  
advertisements. Adolescents who had ever tried smoking and who had the magazine 16  
containing cigarette advertisements expressed more positive attitudes toward smoking 17  
than did those who were not exposed to the advertisements. Adolescents who saw the 18  
magazines containing cigarette advertisements also rated a woman shown smoking more 19

positively than did adolescents who were not exposed to advertisements. This study is 20  
in

20

Demonstrative 6 as Turco, 1997 (U.S. Exhibit 73,663). 21

Q: What conclusions do you draw from this study? 22

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A: This study is evidence that cigarette advertising affects the attitudes of 1  
adolescents 1

toward smoking. A single five-minute exposure to a single magazine containing four 2  
advertisements had a significant impact on attitudes toward smoking and toward smokers. 3

It made those who had ever smoked more positive toward smoking and influenced all 4  
adolescents to have more positive attitudes toward smokers. 5

The latter effect implies that cigarette advertising improves adolescents' 6  
perceptions of smokers. This is an important fact. To the extent that the tobacco 7  
companies' advertising increases adolescents' admiration for smokers, it improves the 8  
prospects for peer acceptance for the adolescent smoker. We need to consider this 9  
effect, 9

along with direct effects on individual adolescents, when evaluating the impact of 10  
cigarette advertising on peer influence processes. 11

Q: Would you describe the sixth study? 12

A: One hundred 10- to 12-year-olds were randomly assigned to see either a photograph of 13  
a 13

pack of Benson & Hedges and a point-of-sale advertisement for Marlboro or to see a 14  
photograph of a Marlboro pack and a point-of-sale advertisement for Benson & Hedges. 15

Seeing point-of-sale advertisements, as opposed to just a picture of a pack, led to 16  
more 16

positive descriptions of the user of the brand. In the case of Benson & Hedges, 10- to 17  
12-

17  
year-olds who saw the advertisement rather than just the pack were more likely to 18  
describe the users as relaxed, interesting, rich, and adventurous. Those 10-to 12-year- 19  
19

olds who saw the Marlboro point-of-sale advertisement rated Marlboro smokers as more

20

adventurous than did students who saw only the picture of the Marlboro pack. 21  
Thus, in both cases, compared to seeing the pack, looking at a single point-of-sale 22  
advertisement increased positive perceptions of the brand user. This also is  
experimental

23

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evidence that cigarette advertising influences adolescents to view smokers more 1  
positively, thereby fostering peer acceptance for those influenced to smoke. 2  
I find it particularly noteworthy that a single exposure to a single point-of-sale 3  
poster could affect the images of the smokers to this extent. This study is in 4  
Demonstrative 6 as Donovan, Jancey, and Jones, 2002. 5

Q: Would you describe the seventh study? 6

A: Yes. This study took place with 304 seventh-grade students. The portion of the study 7

most germane to the current concern compared the effects of seeing magazine 8  
advertisements for Newport, Virginia Slims, and Camel with the effect of seeing three 9  
advertisements unrelated to smoking. 10

This study found that exposure to the cigarette advertisements did not affect 11  
students' ratings of smokers, but did influence students to have more positive thoughts 12

about smokers (e.g., "has lots of friends," "likes to do exciting things") than did 13  
students

13

who saw the unrelated advertisements. This study is in Demonstrative 6 as Pechmann 14  
and Ratneshwar, 1994 (U.S. Exhibit 72,905). 15

Q: Please explain the eighth study? 16

A: In this peer-reviewed study, ninth-grade students looked at pictures of convenience 17

stores. Half of the students saw a convenience store without any cigarette 18  
advertisements, while the other half saw a store with numerous cigarette  
advertisements.

19

Those exposed to the store with cigarette advertising: (a) perceived that cigarettes 20  
could

20

be more easily purchased in the pictured store, (b) perceived that cigarettes could be 21  
more

21

easily purchased in other stores, (c) perceived a higher prevalence of adolescent 22  
smoking,

22

and (d) expressed less support for policies to control tobacco use. This study appears 23  
in

23

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Demonstrative 6 as Henriksen, Flora, Feighery, and Fortmann, 2002. 1

Q: Would you describe the ninth study? 2

A: This is a particularly carefully done peer-reviewed study, which provides a clearer 3

explanation than we have had up to this point of how cigarette advertising affects 4  
adolescents. It also has important evidence regarding adolescents' underestimation of  
the

5

influence of advertising on them. The theoretical analysis motivating this is: 6  
Cigarette ads may prime or make salient the notion that smokers 7

are attractive, successful, and healthy .... (Pechmann & Shih, 8  
1999). A prime is 'an activating stimulus event ' that causes a 9  
'preactivation of social constructs or knowledge structures' (Bargh, 10  
1989; Kelly, 1955). Thus, a positive smoker stereotype that is 11  
activated by cigarette ads may cause youth to inadvertently seek 12  
out favorable evidence about smokers. Seemingly due to this 13  
favorable evidence, but in actuality because the cigarette ads drove 14

perceptions to be favorable, youth may gradually come to believe 15  
that smokers have desirable traits. ... Accordingly, they may 16  
become interested in smoking themselves. ... Since this process is 17  
nonconscious, youngsters may be unable to protect themselves. ... 18  
As Herr (1989, p. 68) notes, "It is difficult to resist an influence of 19  
which one is unaware. (Page 6) 20  
Thus the authors predicted that seeing cigarette advertisements would be particularly  
21  
influential if young people also saw adolescents who were smokers. This study is in 22  
Demonstrative 6 as Pechmann and Knight, 2002. 23  
The study randomly assigned 718 ninth-grade students from four ethnically 24  
diverse California high schools to view one of eight videotapes that depicted a "slice  
of  
25  
life" of some teenagers their age. The videotape described how the students were 26  
studying advertising and had an assignment to video some advertisements. The 27  
videotapes varied in terms of the advertisements shown, with four possibilities: (1)  
four  
28  
cigarette advertisements, (2) four antismoking advertisements, (3) four cigarette 29  
advertisements and one antismoking advertisement, and (4) four control advertisements  
30  
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not involving smoking. In addition, the videos varied in terms of whether they showed 1  
the teenagers as either smokers or nonsmokers. In what researchers term a 4 by 2  
design,  
2  
half of the young people in each of the four advertising conditions saw teenagers  
depicted  
3  
as smokers, while the other half saw them depicted as nonsmokers. 4  
These researchers created a scale of stereotypic beliefs about adolescents who 5  
smoked. It consisted of 12 items on which smokers were rated: fun/boring, well- 6  
liked/disliked, sexy/not sexy, desirable/undesirable to date, successful/unsuccessful,  
7  
smart/dumb, intelligent/stupid, healthy/unhealthy, well/sickly, natural  
smelling/stinky, 8  
cool/uncool, and winner/loser. 9  
Students exposed to the cigarette advertisements and to the nonsmoking teenagers 10  
rated adolescent smokers significantly more positively on this scale of beliefs about  
11  
smokers. This shows that advertisements, by themselves, influence adolescents to view  
12  
smokers more favorably. 13  
In addition, as predicted, students who saw both the cigarette advertisements and 14  
the smoking adolescents had significantly more positive beliefs about smokers as well  
as  
15  
more positive intentions to smoke in the future. This shows that, in addition to its  
direct  
16  
impact on adolescents' views of smokers, cigarette advertising primes adolescents' 17  
reactions to peers who smoke in ways that improve their attitudes toward peers who 18  
smoke and increase their own intentions to smoke. This is consistent with Romer and 19  
Jamieson's 2001 analysis that cigarette advertising influences adolescent peer groups  
to  
20  
view smoking more favorably. Advertising thereby makes it more likely that their peers  
21  
will accept adolescents if they smoke. 22  
Written Direct: Anthony Biglan, PhD: US v. PM, 99-cv-02496 (D.D.C.) (GK) Page 94  
The study also showed that the impact of exposure to cigarette advertisements and 1  
adolescents who smoke on the ninth-grade students' intentions to smoke was mediated by

2

its effect on their beliefs about smokers. That is, students' beliefs about smokers changed

3

and, as a result, their intentions about smoking changed. This study is in Demonstrative 6

4

as Pechmann and Knight, 2002. 5

Q: You said that the study also provided evidence about adolescents' recognition of the 6

influence of cigarette advertisements on them. What was that evidence? 7

A: This study found that the impact on beliefs and intentions of exposure to the 8 advertisements and to smoking adolescents was significant, even when the student did 9 not recall seeing the advertisements. The authors say the following about this finding: 10

[C]igarette advertising can augment the impact of peer smokers by 11 enhancing perceptions of individuals. Youth may mistakenly 12 assume they have been swayed by smokers, not by ads, because 13 smokers are the more obvious influence agent. Hence, self- 14 reported reasons for smoking may be misleading . . . (at page 15). 15

Q: Taken together, Dr. Biglan, how do the studies you have just described about the 16

impact of cigarette advertising on adolescents support your conclusion that the 17 Defendants' marketing practices influence adolescents to smoke? 18

A: These studies show that: (1) adolescents like cigarette advertising for the brands that

19

target younger people and (2) these advertisements influence adolescents to have more 20

positive views of smoking and smokers. Even a single exposure to cigarette advertising 21

influences the images that adolescents have of smokers. The experimental studies are 22 particularly strong in showing that it is the advertising that affects adolescents' attitudes

23

and images of smokers rather than adolescents developing those positive views only after

24

they start smoking. 25

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The research conducted by the tobacco companies, which I have reviewed and 1 discuss later in this testimony, also shows that the tobacco companies' marketing is 2 successful in conveying positive images of smokers—images that provide the motivation 3

for adolescents to begin smoking. 4

The experimental studies also show that, in addition to its direct effect in 5 motivating adolescents to want to smoke, the tobacco companies' advertising makes 6 smoking a vehicle for achieving peer acceptance because it improves other adolescents' 7

opinions of adolescents who smoke. 8

E. Summary of Scientific Evidence 9

Q: Would you provide us with a brief summary of the scientific evidence you have 10

reviewed regarding how the needs of adolescents play a role in adolescents' 11 beginning to smoke? 12

A: As I discussed in detail earlier, adolescents experience a number of often-powerful needs. 13

Each of these needs makes adolescents vulnerable to marketing that conveys that 14 smoking will meet these needs. Most of the evidence showing that the tobacco 15 companies' marketing conveys these supposed benefits of smoking comes from the 16 tobacco companies' own internal documents. I have reviewed evidence from public 17 health research showing that exposure to cigarette advertising increases the perception 18

that smoking will meet adolescents' needs. These types of studies show that: (1) 19  
adolescents generally perceive that smoking brings a number of youth-relevant benefits; 20

(2) these perceptions are stronger among those more exposed to cigarette advertising; and 21

(3) those adolescents who are high in these needs are more likely to smoke. 22  
The studies I have described show the central role of the tobacco companies' 23  
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image advertising in motivating adolescents to smoke. These studies show that 1  
adolescents have distinct images of smokers and they are more likely to smoke if their 2

self- image is like the image they have of a smoker. The evidence I present below will 3

show that the images adolescents have of smokers of specific brands are precisely the 4  
images that the tobacco companies convey in their marketing. 5

Further evidence of the importance of advertising in influencing adolescents to 6  
smoke comes from the studies I reviewed that show that adolescents who have favorable 7

attitudes toward smoking—or even toward cigarette advertising—are more likely to 8  
smoke. 9

In the last set of studies I reviewed, the results show that adolescents' favorable 10  
views of smoking are due to cigarette marketing. These studies demonstrate that 11  
exposure to cigarette advertising increases favorable images and attitudes of smokers. 12

Five of these studies are especially strong evidence that cigarette advertising influences 13

adolescents, because they involved experimental manipulation of exposure to advertising 14

that controlled for other possible influences. Each of these studies shows that, without 15

regard to the level of parental or peer influences to smoke, adolescents who are exposed 16

to cigarette advertising are influenced to view smoking and adolescent smokers more 17  
favorably or to believe that smoking is more prevalent among adolescents. 18

Q: Are the types of studies that you reviewed important for your assessment of the 19

Defendants' marketing practices? 20

A: Yes. It is important to highlight the variety of study types that support the conclusion 21

that the tobacco companies' marketing practices influence adolescents to smoke. 22  
Conclusions from scientific studies are stronger when the relationships under study are 23

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shown through a variety of methods. This is because any single method has limitations. 1

In the present case, the evidence I have described includes studies of self- images, 2  
psychological needs, and general attitudes toward smoking as predictors of smoking. The 3

impact of advertising has been measured in a variety of ways in these studies, including 4

tests of recognition of advertisements, rated liking for the advertisements, and ratings of 5

the degree to which the advertisements make smoking appealing. All of these measures 6  
have been shown to predict smoking. Smoking has been measured by self- reports of 7  
smoking and studies have also measured intentions to smoke or susceptibility to begin 8  
smoking. In addition, evidence has been presented that susceptibility predicts the later 9

onset of smoking. 10

Q: In addition to the variety of study types, are there any other characteristics of the

11

evidence you reviewed that are important for your analysis? 12

A: Yes. The studies I reviewed have also varied in design. Studies of relationships between 13

measures of psychological needs; images of smokers; attitudes toward smoking; and 14 exposure, recognition, and liking for advertisements have been related to smoking 15 intentions and smoking behavior through both concurrent and longitudinal designs. 16 There are studies in which exposure to advertising has been experimentally manipulated, 17

a design that allows for particularly strong causal inferences. In short, there is a web of 18

evidence that is consistent in showing that adolescents have a number of important needs, 19

that cigarette marketing conveys to them that smoking can meet those needs, and that 20 adolescents are motivated to and do take up smoking in the hopes of satisfying those 21 needs. 22

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Q: Have you reviewed all relevant public health research for your analysis in this case? 1

A: No. I want to make clear that the evidence I have reviewed is not the only public health 2

research regarding the influence of cigarette marketing on adolescent smoking. I have 3 restricted my discussion to research regarding the impact of cigarette advertising on the 4

images and attitudes that adolescents form about smoking and the ways in which the 5 images of smokers lead adolescents to believe that they can meet important needs by 6 smoking. There is a wealth of additional research about the impact of cigarette 7 advertising and promotion on adolescents' intentions to smoke and actual smoking that 8 shows that the tobacco companies' marketing practices do influence adolescents to 9 smoke and is consistent with the research I have reviewed here. My understanding is that 10

other experts will be testifying about this research in detail. 11

A list of some of these studies comprises Demonstrative 7. Each study, after 12 controlling for peer and parental influences, found exposure to cigarette advertising to be 13

an influence on smoking behavior or on intentions to smoke, over and above the 14 influence of peers and parents. Indeed, in many of the se studies, peer and parental 15 influences were not even significant predictors of smoking behavior, when measures of 16

advertising exposure were included in the analysis. 17